DOCUMENT RESUME

ED 088 869 SP 007 842

| | |
|---|---|
| AUTHOR | Millman, Jason |
| TITLE | Graduate Training Program for Research Methodologists. Final Report. |
| INSTITUTION | Cornell Univ., Ithaca, N.Y. School of Education. |
| SPONS AGENCY | National Center for Educational Research and Development (DHEW/OE), Washington, D.C. |
| BUREAU NO | BR-6-2170 |
| PUB DATE | Sep 73 |
| GRANT | OEG-0-71-3235(520) |
| NOTE | 49p. |
| EDRS PRICE | MF-$0.75 HC-$1.85 |
| DESCRIPTORS | Doctoral Programs; *Educational Research; Fellowships; *Graduate Study; *Interdisciplinary Approach; *Research Methodology |

ABSTRACT

This paper provides documentation of the Elementary and Secondary Education Act Title IV-supported fellowship program for educational research methodologists developed at Cornell University. The program was characterized as interdisciplinary in nature with few course restrictions. This resulted in great diversity among the programs of the individual students; about two-thirds of the course work was elected outside the department of education. The modal grade earned was A. Twelve students of outstanding ability and prior achievement received support. Two dropped out of the program. Although only three students have received their Ph.D.'s under the program to date, the majority of the trainees are presently employed in research and research-related occupations. This document contains procedures for setting up the program; results, including data on the students; and conclusions. Appended are a pamphlet containing basic information for the students on the Cornell Title IV research training programs, a description of the research methodology program, the advertisement used for recruiting students to the program, the major practicum experiences of trainees, student reactions to the three Cornell training programs, and addresses and occupations of the students in the research methodology training program. (Author/DDO)

ED 088869

Final Report

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

Project No. 6-2170
Grant No. OEG-0-71-3235(520)

# GRADUATE TRAINING PROGRAM FOR RESEARCH METHODOLOGISTS

Jason Millman

Department of Education
Cornell University

Ithaca, New York

September 1973

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
National Center for Educational Research and Development

SP 007 842

TABLE OF CONTENTS


| | Page or Appendix |
|---|---|
| List of Tables | ii |
| Introduction | 1 |
| Procedures | 2 |
| Results | 7 |
| Conclusions | 14 |

Appendices

| | |
|---|---|
| BASIC INFORMATION OF THE CORNELL TITLE IV RESEARCH TRAINING PROGRAMS | I |
| DESCRIPTION OF THE RESEARCH METHODOLOGY TRAINING PROGRAM | II |
| ADVERTISEMENT USED FOR RECRUITING STUDENTS TO THE RESEARCH METHODOLOGY TRAINING PROGRAM | III |
| MAJOR PRACTICUM EXPERIENCES OF TRAINEES | IV |
| STUDENT REACTIONS TO THE THREE CORNELL TRAINEE PROGRAMS | V |
| ADDRESSES AND OCCUPATIONS OF TRAINEES | VI |

LIST OF TABLES

Page

Table 1. CREDIT HOURS EARNED BY DEPARTMENT ..... 7

Table 2. ADMISSION DATA ..... 10

Table 3. ENROLLMENT DATES AND DEGREES EARNED ..... 11

Table 4. GRADES ACHIEVED WHILE RECEIVING FELLOWSHIP SUPPORT . 12

# Chapter 1

## INTRODUCTION

The Cooperative Research Act of 1954 (P.L. 83-531), as amended by the Elementary and Secondary Education Act of 1965 (P.L. 89-10) and the Elementary and Secondary Education Amendments of 1966 (P.L. 89-750), authorized grants and contracts to encourage and support quality training of educational researchers and research-related personnel. Three such grants were awarded to Cornell University in 1966 to provide fellowship and support monies to train educational researchers in research methodology, curriculum and instruction, and foundations. This report deals only with the training program in research methodology.

Both the Procedures and Results chapters are organized into two sections, program and students. Concluding remarks are contained in Chapter IV.

## Chapter 2

## PROCEDURES

### A. *Program*

#### 1. *General Description of All the Cornell Title IV Training Program*

The most distinctive feature of all the Cornell Title IV training programs is that they are not programs in the usual sense of the word. There is not a fixed program of courses, for example, which students are required to take in a certain sequence. There are three required courses and seminars from which students may be exempted when they can demonstrate proficiency on the objectives of these courses. In addition, there are requirements of the Cornell Graduate School regarding examinations, the dissertation, and residence (instructional) units, as well as the USOE requirement regarding practicum. Except this minimal structuring of course program, each student is given wide latitude to plan an educational experience which is best suited to his talents and interests but targeted at acquiring proficiency in educational research, development, dissemination and evaluation skills.

One might expect a splintering of effect from such permissive diversity but there is an educational value to the *group* that derives from their individual specializations. Good educational research, we believe, combines practical, methodological and foundational concerns. The practical concerns of the Curriculum and Instruction Fellows in the improvement of educational practice includes a concern for the philosophical basis for the concept of "improvement" just as much as it includes a concern for research methods. Likewise the Fellows in Research Methodology must relate their concern for research design to an actual research design of the C & I Fellows just as they must make clear to the philosophers the nature of assumptions, of inference, and the justification of theoretical models. The substantive generalizations of educational sociologists and psychologists must find a way into two different kinds of practice: that of education and that of research. The ability

to relate specialized skills and knowledge to the total context of educational research can be developed only through practice in doing so. Cornell Title IV Fellows are a group. They attend colloquia together (the last colloquium of 24 Fellows centered on the issue of behaviorally-defined objectives). They work together on research projects, attend special seminars together, and interact in numerous informal ways which we believe have a marked impact on their professional development. This sense of unity within diversity is another special feature of the Cornell program.

A third distinctive feature of the Cornell programs is the University-wide nature of the preparation. It is literally true that well over half the courses taken by our students are elected from departments outside of Education. At least one and very often two of each student's 3-man special committee (responsible for approving courses and administering subject matter and thesis examinations) are from outside the Department of Education.

A fourth special feature is a heavy reliance upon a variety of practicum experiences under expert supervision. Students are free to choose their practicum experiences from a wide variety of situations in any number of locations. Some students have traveled to other institutions (Michigan, Educational Testing Service, Columbia University, etc.) in order to obtain special instruction and experience seen of particular value to them. Our students have been placed in local schools, worked on Title I and Title III projects, worked on projects at all levels of education, as well as involvement with projects within the University setting. In all cases, the trainee is under the supervision of a person respected by the program directors for his competence. A practicum without supervision by top-notch personnel would not be a rich learning situation. We are fortunate that in the Cornell community there are many outstanding individuals engaged in interesting projects who are willing to provide responsible guidance.

Finally, it should be clearly understood that the three Cornell training programs encompass all of the R, D, D, and E functions. Although we believe that too much has been made of the differences in skills needed for R, D, D, and E -- we do recognize that different emphases are given to the skills needed to conduct each of these functions. Such differences in emphasis are present at Cornell. Most of the trainees in the Curriculum and Instruction program do plan to become product developers. However, in the course of their training, they become involved in no small way with the problems of dissemination evaluation and research on instruction -- indeed, some students in this program have as their primary specialization these nondevelopment research functions. The foundations program has as its primary goal the preparation of educational researchers of a somewhat unique type as spelled out in more detail in the description and report of that program. It is a matter of fact, however, that the research area of many students in this program deals heavily with questions of central importance to the research related functions. Finally, the students in the methodology program are well read and prepared in the area of evaluation -- and it is predicted by the director of that program that half of them will make their professional commitment primarily in the area of evaluation. Characterization of the Cornell Title IV programs as RESEARCH programs only is clearly not accurate. It is quite fair to say that our graduates have been trained to and will be engaged in at least evaluation and development efforts almost as much as in research per se.

Basic information about the three Cornell programs was assembled in a booklet (see Appendix I) and distributed to all Title IV students.

2. *Specific Objectives of the Research Methodology Program*

This graduate training program is intended to prepare individuals capable of (1) conducting significant educational research on methodological problems, (2) performing evaluations of educational programs, (3) participating as a member of an educational research or evaluation team, (4) advising research and educational personnel regarding research design, evaluation strategy, instrumentation, and analysis, (5) appraising the research of others critically, and (6) teaching, at a university level, courses in the broad area of research and evaluation methodology.

To achieve these objectives, students are encouraged to submit and review papers to the Cornell Working Paper Series, to teach topics in elementary methodology courses, to consult with faculty and graduate students on methodology problems, to review manuscripts submitted to the Journal of Educational Measurement, and to attend professional meetings. In addition, each student is allocated from $100 to $250 (depending upon year in the program) to use for professional expenses.

A further description of the program is contained in Appendix II. This description was sent to all prospective students.

B. *Students*

1. *Recruitment*

Because of the lateness of the notice that the grant was awarded, initial trainees were recruited from presently enrolled Cornell students. Appendix III contains an example of an advertisement used to recruit students.

2. *Selection*

Emphasis is placed on selecting the able student who enjoys mathematics and is interested in applying quantitative methods to research problems in education. After the poor performance of one of the trainees who had a GRE-Mathematics score of 800 and who came right out of undergraduate college, the Project Director placed relatively more emphasis on previous grades and indications that the trainee will be mature enough to get the most out of the training experience.

3. *Staff*

Because of the absence of a structured sequence of required courses, the faculty most closely involved changed from student to student. Professor Millman served as Project Director throughout the 7-year grant and, more than anyone else, was in charge of coordination and monitering of the training program. He also served as major advisor for seven of the twelve trainees.

## Chapter 3

## RESULTS

### A. *Program*

A summary of credit hours earned by department is shown in Table 1. The interdisciplinary nature of the course work is evidenced by the fact that only 37% of the credit hours elected by research methodology students were in the Department of Education.

TABLE 1

CREDIT HOURS EARNED BY DEPARTMENT

| Department | Number of Credit Hours | Percent |
|---|---|---|
| Education | 219 | 37 |
| Psychology | 199 | 33 |
| Mathematics | 51 | 9 |
| Child Development | 45 | 8 |
| Industrial and Labor Relations | 31 | 5 |
| Sociology | 28 | 5 |
| Other* | 26 | 4 |
| Total | 599 | 101 |

*Anthropology, Biometrics, Computer Science, Linguistics, Operations Research, Philosophy.

Not obvious in Table 1 is the fact that a great number of the credit hours elected in such departments as Psychology and Industrial and Labor Relations were methodology courses. Further, when the percent distribution was recalculated only for credit hours in which a letter grade (A through F) was given, the recalculated percents did not vary by more than 2% from those shown in Table 1. Thus, although students often chose not to elect a course for a grade (i.e., audited the course or elected the S/U grading option), there was no tendency to do this for courses in a particular department.

A great variety of practicum opportunities was experienced by the students. A listing of some of these may be found in Appendix IV.

The working paper series did not work out well. Only nine papers were eventually accepted. Titles and authors follow:

1. Assumptions by Robert H. Ennis and Allen T. Pearson
2. Piaget's Logic by Robert H. Ennis
3. Jensen's Verbal Learning Research and Theory: Does it Support His Educational Recommendations? by Norman W. Becker
4. Assessing the Importance of Independent Variables in Nonlinear Causal Laws by Richard B. Darlington and Jean F. Rom
5. Reporting Student Progress: A Case For a Criterion-Referenced Marking System by Jason Millman
6. Piaget's Physical Causality, Re-examined by Gerald S. Friedman
7. The Education of Colonial Americans in Britain as Seen by Americans by Elizabeth Lang
8. Mnemonic Systems by Keith Rayner
9. Learning and Cognitive Growth and The Scientific Enterprise: Parallel Aspects and Implications for Curriculum and Instruction by Barbara L. Bowen

Appendix V contains trainee reactions to the three Cornell programs. Not surprising, the interdisciplinary approach with stress on freedom was mentioned.

B. *Students*

Admissions information on the 12 trainees in the Research Methodology Program is contained in Table 2 on the next page. High quality students were attracted to the program. GRE scores were consistently above 600 and undergraduate grades usually very high.

Table 3 lists the enrollment dates and degrees earned for the trainees. The mean traineeship period is only about two years, although three years of support were possible. Several reasons can account for this. First, two of the first group of students (Burrill and Gagen) were recruited from current enrollees and were in mid-program so to speak. Second, two students (Bierley and Mink) dropped out of the program. Third, two other students (Cieslak and Knapp) had already received one year of Title IV fellowship support in another institution, and thus were eligible only for two additional years.

The striking thing about Table 3 is that only three of the twelve trainees received Ph.D. degrees, and two of them over a year after the termination of their support. Five trainees (Cieslak, Cox, Poppen, Rom and Williams) are well into their thesis and will probably complete their degree requirements <u>eventually</u>.

TABLE 2

ADMISSION DATA

| Name | Graduate Record Exam Verbal | Math | Advance | Undergraduate Institution | Grade Aver |
|---|---|---|---|---|---|
| Bierly, Thomas | 580/(610[a]) | 800 | 600 | U. Toledo | 3.0 |
| Burrill, Donald | 820[a] | [a] | - | Yale U | 80 |
| Cieslak, Paul | 480 | 690 | 620 | U. Wisconsin/Mil. | 2.7 |
| Cox, James | 630 | 710 | 550 | Michigan State | 2.7 |
| Gagen, Richard | [b] | [b] | - | U. Wisconsin | 3.0 |
| Knapp, Joan | 700 | 510 | 520 | U. Florida | 3.8[d] |
| Mink, Stanley | 670 | [c] | - | Hunter | 3.3 |
| Poppen, Paul | 650/(640[a]) | 790 | 640 | Central C. (Iowa) | 3.9 |
| Rom, Jean | 690 | 710 | 650 | Barnard/3.1 in major | 2.4 |
| Unsworth, Margaret | 750[a] | [a] | - | Rutgers U. | 2.8 |
| Weinberg, Sharon | 660 | 660 | - | Cornell U. | 3.3 |
| Williams, Roy | 670 | 810 | 950[e] | Oberlin | n.a.[d] |

[a]Estimated from the score on the Miller Analogies Test from equipercentile norms (Educational and Psychological Measurement, N = 1341, 11 colleges). Since these individuals are mathematically inclined, their expected score on GRE-Math is even higher.

[b]GRE taken through the National Science Foundation but not now available. The student reports his GRE-Math was at the 99th percentile.

[c]Scored 47 out of a maximum of 50 on the Doppelt Mathematical Reasoning Test - a very high score, indeed.

[d]Phi Beta Kappa.

[e]This is no typographical error. The advance test was mathematics.

TABLE 3

ENROLLMENT DATES AND DEGREES EARNED

| TRAINEE | TRAINEESHIP PERIOD | ADVANCED DEGREE AND DATE COMPLETED | |
|---|---|---|---|
| Bierley, Thomas | 9/1/68-8/31/69 | M.S. | Jan. 1970 |
| Burrill, Donald | 9/1/66-8/31/67 | Ph.D. | Sept. 1969 |
| Cieslak, Paul | 9/1/69-8/31/71 | | |
| Cox, James | 2/1/70-6/30/72 | | |
| Gagan, Richard | 9/1/66-8/31/68 | Ph.D. | Sept. 1969 |
| Knapp, Joan | 9/1/69-8/31/71 | | |
| Mink, Stanley | 9/1/69-1/31/70 | | |
| Poppen, Paul | 9/1/70-8/31/73 | | |
| Rom, Jean F. | 9/1/67-8/31/70 | | |
| Unsworth, Margaret | 9/1/66-8/31/69 | | |
| Weinberg, Sharon | 9/1/69-8/31/71 | Ph.D. | Dec. 1971 |
| Williams, Roy | 9/1/66-8/31/69 | M.S. | June 1969 |

A distribution of grades achieved by students while in the fellowship program may be found in Table 4.

TABLE 4

GRADES ACHIEVED WHILE RECEIVING FELLOWSHIP SUPPORT

| GRADE | NUMBER OF CREDIT HOURS | PERCENT |
|---|---|---|
| A | 211 | 35 |
| B | 93 | 16 |
| C | 4 | 1 |
| D | 7 | 1 |
| F | 7 | 1 |
| S | 95 | 16 |
| U | 0 | 0 |
| INC | 61 | 10 |
| AUDIT | 121 | 20 |
| TOTAL | 599 | 100 |

Letter grades were earned for only 322 (54%) credit hours, reflecting the facts that students were encouraged to explore many intellectual areas and many seminars used only S/U grading. When letter grades were given, the modal grade was A (66%). Ten of the 14 credit hours of D and F grades were given to the student whose program was terminated after one term.

As indicated in Table 3, only three Ph.D. theses were completed. Titles and authors follow:

Computer-generated errors in statistical analysis. [Burrill]

Pluralism and community structure: a comparative analysis of rural centers in New York State. [Gagen]

Large variable canonical analysis: a proposed variant of canonical variate analysis. [Weinberg]

In addition, Bierley wrote a master's thesis, Letters of recommendation as predictors of student success in graduate schools.

Finally, the most current address and occupation for each of the Research Methodology trainees may be found in Appendix VI. Nine trainees are currently holding research or research-related occupations.

# Chapter 4

## CONCLUSIONS

Continuing the Cornell tradition of "fredom with responsibility," the present program for training educational research methodologists permitted the students great choice in educational program. The curriculum encouraged the catering of special interests and resulted in diversity among students in their selection of course offerings from throughout the University.

The twelve students receiving support were highly qualified and performed extremely well in their course work. The freedom they were provided, however, undoubtedly contributed to the inefficiency with which they progressed toward fulfilling the Ph.D. requirements. The fact that only three of the twelve students have thus far earned this degree has disappointed the Project Director. A 3-year Ph.D. program perhaps is unrealistic. More encouraging to the Project Director is the fact that most of the trainees are presently employed in research and research-related occupations.

Finally, the impact of the fellowship support program on Cornell must be cited. The ability of Cornell to attract talented graduate students has not only enhanced the institution but affected the amount and quality of the work of its faculty. The contrast to the present where no support is available is both dramatic and stark. Longer term graduate student support of some type is desperately needed to permit the graduate program to survive in a vital and vigorous way.

# APPENDIX I

## BASIC INFORMATION OF THE CORNELL TITLE IV RESEARCH TRAINING PROGRAMS

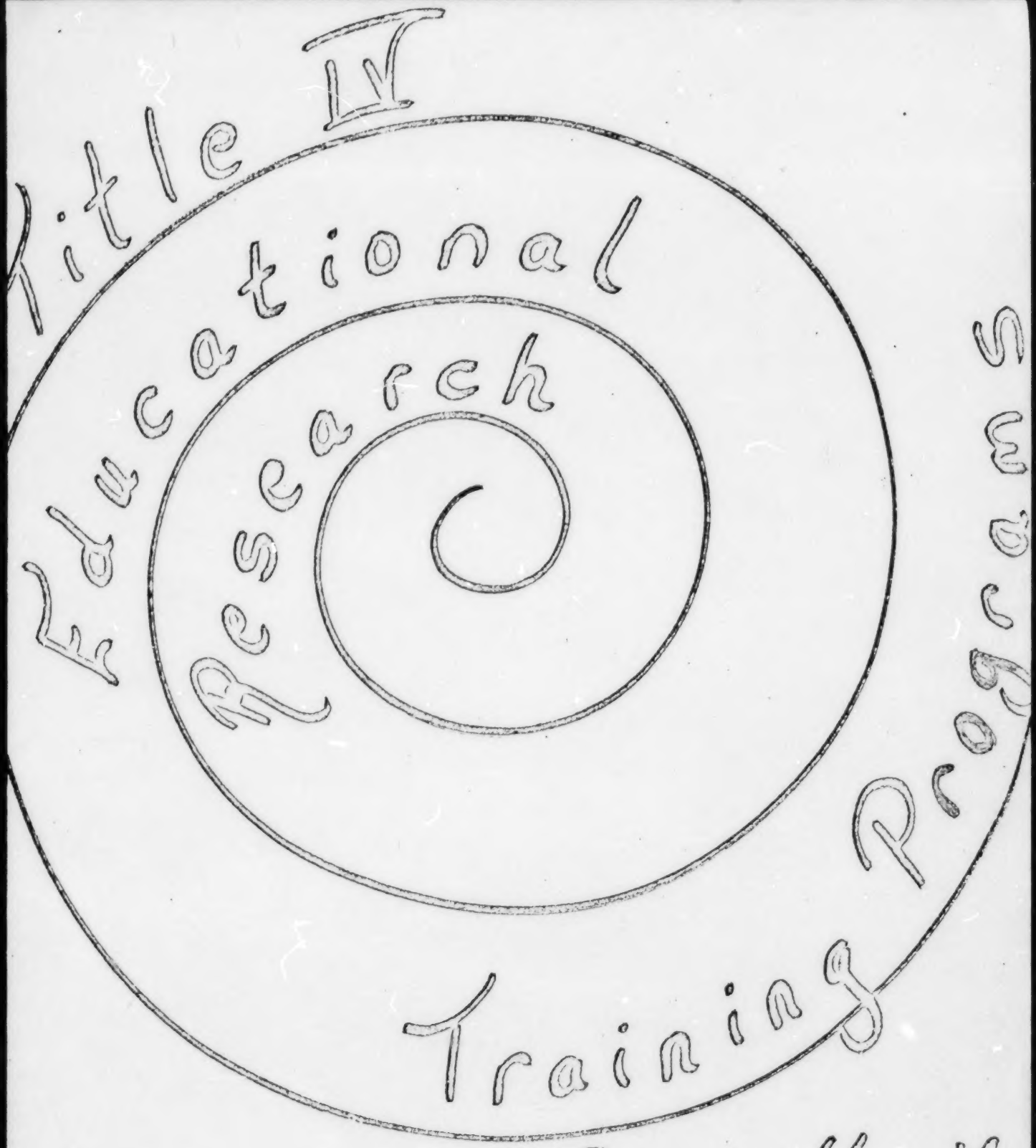
Title IV
Educational
Research
Training Programs
at Cornell U.
Ithaca, N.Y.
Basic Information

TABLE OF CONTENTS


| | Pages |
|---|---|
| BACKGROUND | 1 |
| Authorization. | 1 |
| Purpose. | 1 |
| ADMINISTRATION AT CORNELL | 2-6 |
| Personnel. | 2 |
| Appointment Forms. | 2 |
| Dependents. | 2 |
| Stipends. | 3 |
| Student Allocation for Research Training Expenses. | 3-5 |
| Dates of Programs. | 5-6 |
| Academic Activity. | 6 |
| YOUR PROGRAM OF STUDIES | 7-10 |
| General. | 7 |
| Practicum and Proficiency/Course Requirements. | 7-10 |
| STANDING TITLE IV COMMITTEES | 11 |
| Colloquium Committee. | 11 |
| Publications Committee. | 11 |
| GENERAL APPROACH | 12 |

# BACKGROUND

Authorization. The Cooperative Research Act of 1954 (P.L. 83-531), as amended by the Elementary and Secondary Education Act of 1965 (P.L. 89-10) and the Elementary and Secondary Education Amendments of 1966 (P.L. 89-750), authorizes grants and contracts to support training in educational research. The Educational Research Training Program is administered by the Research Training Branch, Division of Higher Education Research, Bureau of Research, U. S. Office of Education.*

Purpose. The major purpose of the program is to encourage and support quality training of educational researchers and research-related personnel. Some specific objectives are to improve curricular capability for training, to help develop specialized training programs, and to extend opportunities for a greater number of persons to pursue careers in educational research by providing stipends and other allowances for trainees.*

---

*Page One, Guidelines for Educational Research Training Program.

# ADMINISTRATION AT CORNELL

Personnel. Here at Cornell Mr. Jason Millman, 211A Stone Hall, is the Director of the Graduate Training Program for Research Methodologists; Mr. Joseph Novak, 3 Stone Hall, heads the Graduate Research Training Program in Curriculum and Instruction; and Mr. Robert Ennis, 107 Stone Hall, directs the Educational Research Training Program in Foundations of Education as well as acting as Coordinator of the three programs. The financial administration of these programs is handled by Mrs. Joan Taylor, 100 Stone Hall.

Appointment Forms. Appointment forms must be completed and submitted to Mrs. Taylor no later than August 15th of the coming academic year. Fill in only the yellow worksheet, but sign both the worksheet and the application form.

Dependents. Page 2, Guidelines for Educational Research Training Program, defines a dependent as follows:

> A dependent is an individual, other than the trainee, whose income is less than $2,000 per year, who receives one-half or more of his support from the trainee and who is either (1) his spouse or (2) a person for whom the trainee is eligible to receive a dependency allowance for Federal income tax purposes. However, a married trainee who files a joint return and whose spouse has the major income may not claim any dependents.

Under these terms each eligible dependent may receive a maximum of $600 for each 12-month period.

Stipends.

| | |
|---|---|
| First year | $2,400 |
| Second year | $2,600 |
| Third year | $2,800 |

Theoretically, you should receive a monthly check. In actual practice, however, distribution varies yearly. A schedule of payments for the forthcoming year is enclosed with a letter from the Grad. School that announces your award. This past year the first check was available two weeks after registration; and the others were available on either the 5th or 6th of each month through May. The summer payment was made in one lump sum. Checks may be picked up at the Student Aid Checks window in 260 Day Hall.

Student Allocation for Research Training Expenses.

| | |
|---|---|
| First year | $100 |
| Second year | $150 |
| Third year | $250 |

As of September 1st this policy will hold for all students henceforth, regardless of their present Title IV status. Commitments for the above amounts will not be made for more than the year ahead but, barring unforeseen circumstances, this policy will continue henceforth in accord with the above prospective allocation.

Any funds not expended in one year may be held in reserve for the following year. However, to come under this allocation, expenses must be incurred by the time a student goes off stipend. At the discretion of the individual director extensions are possible for students in need.

Funds may be spent for legitimate research training expenses, including books, materials, supplies, lab equipment, tests, and travel to professional meetings. In order to secure supplies, obtain the proper forms from the bookkeeper (100 Stone Hall), secure the approval and signature of the chairman of your special committee and your program director, and return the form to the bookkeeper who will process it.

If you plan to travel, be sure to file with the bookkeeper a declaration of intended travel which must be approved and signed by your committee chairman and program director two weeks prior to your departure. If for any reason you cancel your trip, remember to notify the bookkeeper of your decision. If your trip will cost more than $50 and you require an advance, you should submit an itemized breakdown of proposed expenses to the bookkeeper no later than two weeks before you leave. The following is a schedule of maximum state allowances per day (unless otherwise specified):

| | |
|---|---|
| Breakfast | $1.50 |
| Lunch | $1.65 |
| Dinner | $4.35 |

| | |
|---|---|
| Lodging | $9.00[a] |
| One tip per trip | $ .50 |
| Limo or bus fare without receipt | $2.00[b] |

If you leave Ithaca before 7:00 a.m., you may claim your breakfast allowance; and if you return after 7:00 p.m., your dinner may be claimed. Remember to obtain a quantity of receipt forms from the bookkeeper before you leave. Your receipts and list of expenses incurred should be filed with the bookkeeper no later than a week after your return. It will take approximately a month to process the forms for reimbursements.

Dates of Programs. Programs officially begin September 1st of each year even though classes do not start until a later date. For those of you new on Campus, this time between September 1st and the commencement of classes should be spent familiarizing yourself with the Cornell environment, particularly the library system, and catching up on reading in your field of interest. By registration day you should have talked to the director of your program; and you should have provided his secretary with your mailing address, phone numbers at which you may be reached, and your office address if you have one.

---

[a]Plus tax out of New York State.

[b]Maximum for entire trip.

The standard program is of three-year duration, contingent on satisfactory performance and (as with every Federally supported program) Congressional appropriation.

Academic Activity. We expect you to be academically active for at least eleven months of the year. Cornell recesses, if and only if they are devoted to academic pursuits, count as academic activity time.

Since you do not register for courses during the summer (interpreted as the last day of classes in the spring through the first day of classes in the fall), you are required to submit to your program director before the end of the spring semester a statement of your proposed summer plans. This statement of intended activity should include a list of dates and the nature of your academic activity, and should be approved and signed by your special committee chairman.

General. Graduate programs at Cornell are characterized by their being individually tailored to fit the needs and goals of each student. We assume that your goals include doing educational research and have specified a minimum of requirements (discussed in the next section) aimed at promoting this goal.

Aside from these requirements your program will be planned by you and your special committee (composed usually of three faculty members representing your major and minor(s) whom you select).

Selection of courses is somewhat complicated by the fact that Cornell is composed of a number of semi-autonomous colleges and schools, which offer courses and publish separate listings of these courses in their own announcements. The Registrar's Office at 240 Day Hall publishes a Course and Time Roster for each semester and distributes large quantities to each college and school office. This list does not contain a description of courses, though. Catalogs are on file in the respective college offices and are available in many other places.

Practicum and Proficiency/Course Requirements. Everyone must complete a minimum of 600 hours of practicum. In addition, proficiency in, or satisfactory completion of, each of the following courses is required: Ed. 598, 599, and 699.

Required practicum and proficiency/course descriptions and policies are as follows:

A. Practicum.

1. Ed. 698, Practicum in Educational Research. Fall and spring terms. Three to six hours credit per term. Messrs. Ennis, Millman, and Novak.

   Participation in a research project under the direction of the principal investigator of said project. Level of responsibility will increase with the experience and capability of the candidate, the eventual goal being the assumption of responsibility for a portion of the research.

A minimum of 600 hours of research apprenticeship is required by the end of the third year. Prior experience might count if of the proper type. You must maintain a weekly log, containing an accurate account of hours spent (and the nature of the activity), and submit a copy to the director of your program by September 1st of each year.

Information regarding possible areas of research may be obtained from your committee memebers, your program director, and from announcements that you will receive from the office of the Coordinator.

Overall supervision of the practicum is the responsibility of each program director, but daily supervision rests with the director of the selected research project, who ordinarily will decide on the grade for the semester. For administrative purposes in registration each student will list his program director (Ennis, Millman, or Novak) as the official instructor for his Ed. 698 practicum.

B. Proficiency/Courses.

1. Ed. 598, Education as a Field for Inquiry. Fall term. Credit three hours. Mr. Stutz.

   Designed primarily for students without previous training or experience in the field of education. This course is intended to provide insight into the nature and content of the field to which their research efforts will be directed. The course will deal with the structure of the educational enterprise, its history, its objectives, and the ways it seeks to achieve them, its main concerns, emphases, and sources of strain.

2. Ed. 599, Methods of Educational Inquiry. Fall and spring terms. Credit three hours. Mr. Millman and staff.

   An introduction to the methods that underlie the conduct of significant research in education. Emphasis will be placed upon describing and analyzing such procedures as forming concepts, developing educational products, making observations and measurements, performing experiments, building models and theories, providing explanations, and making predictions. For graduate students in their first year of residence.

   Prerequisite one course in statistics or Ed. 452 elected concurrently.

3. Ed. 699, Conceptual Problems in Educational Inquiry. Fall term. Credit three hours. Primarily for doctoral candidates in their second year of residence. Prerequisite, Ed. 599 or equivalent, or permission of instructor. Mr. Ennis.

   An examination of such concepts as causation, operationism, validity, reliability, hypothetical construct, generalization, explanation, probability, and hypothetico-deductive method.

Proficiency in Ed. 598 and 599 shall be demonstrated by the end of the first year or registration shall be required in the fall of the second year. Proficiency in 699 shall be demonstrated by the end of the second year, or registration required in the fall of the third year. Fellows starting in the second year shall be expected to demonstrate proficiency in 598 and 599 immediately, or else register and take 598 and 599 in the fall of that beginning year.

The instructors of each of the required core courses (598, 599, 699) will decide (on application by the student) whether student has satisfied the proficiency requirement, if the student has not satisfactorily completed the specified course.

Colloquium Committee. The Colloquium Committee shall have three members, one from each program. There again will be a budget of $300, which will be used for speakers, if necessary, publicity purposes, etc.

Publications Committee. The Publications Committee shall have three members, one from each program. There will be a budget of $500.

One function of this committee is to supervise the prepublication series: "Cornell Working Papers in Educational Research". Papers in this series are not expected to be in final form; rather, they should be at a stage in which reactions from interested readers can be of most help to the author as he prepares a later draft for publication. Contributions dealing with topics related to any area of concern within the three Title IV programs are encouraged from both faculty and students. Each paper will be circulated among associates of the Title IV training program, Washington officials, and a limited number of scholars most likely to be interested in the content of the particular paper. A common cover is being used for each paper which contains a statement that the contents may not be quoted or reproduced without written permission of the author.

GENERAL APPROACH

You will note that the approach taken here places the responsibility for working out the arrangements in the hands of you, your chairman, and your supervising research professor. But it also insures the directors' being informed of what is happening so they can honestly report to the U.S. Office of Education that the intent and the promises in the description of the programs are being fulfilled.

Prepared by
Ruth Ann Lewis, Research Aide
Office of the Coordinator

APPENDIX II
DESCRIPTION OF THE RESEARCH METHODOLOGY TRAINING PROGRAM

Cornell University
Ithaca, New York

Graduate Training Program for Research Methodologists

Degree offered. Ph.D.

Specialization options. Students may major in one of the following: (1) mental measurement or research methodology in one of the behavioral science departments (e.g., psychology, sociology, etc.), (2) research methodology in the Field of Education, (3) any concentration in the Field of Statistics, (4) any concentration in the Field of Computer Science.

Prerequisites. No fixed prerequisite. Emphasis is placed upon mathematical aptitude and/or achievement.

General degree requirements. Six units of residence (about six semesters of full time study at the graduate level). No course hour requirement.

Other specific requirements for trainees. Six core courses (any of which may be waived by demonstrating proficiency), practicum experiences, university teaching under supervision, and dissertation dealing with methodological question.

Objectives. The Cornell program to train researchers in research methodology is aimed at the able student who enjoys mathematics and is interested in applying quantitative methods to research problems in education. About half the students choose to major in the Field of Education; half major in the other departments or fields indicated above. The program is highly flexible (maximum of six required courses), and is designed to complement the individual student's background and interest. Students are encouraged to make use of the total course and research resources of the University without regard to departmental lines. The practicum includes supervised consultation with researchers on design and analysis questions, involvement in current research on methodology, and some experience teaching at the university level.

Address all communications to

Dr. Jason Millman
Stone Hall
Cornell University
Ithaca, New York 14850

APPENDIX III

ADVERTISEMENT USED FOR RECRUITING STUDENTS TO THE RESEARCH METHODOLOGY TRAINING PROGRAM

## Taking This Test Could Change Your Life

| Yes | No | |
|---|---|---|
| ☐ | ☐ | Do you enjoy mathematics and thinking quantitatively? |
| ☐ | ☐ | Were (are) you a better-than-average student? |
| ☐ | ☐ | When in college did you wish that you could have taken courses that you preferred rather than those needed to satisfy rigid program requirements? |
| ☐ | ☐ | Would you like a fellowship and free tuition (plus dependency allowances when applicable) to do graduate work leading to a Ph.D. at a major institution? |
| ☐ | ☐ | Would you be interested in exciting new occupational opportunities? |

If you answered, "yes", to the above (sometimes loaded) questions, I invite you to consider a career as an educational research methodologist. As a research methodologist, you would advise the increasing number of educational researchers and evaluators on problems of research formulation, design, and analysis. Most of our Cornell graduates go into college and university teaching and research positions. Others work within federal (e.g. regional laboratories), state, and local (usually larger school districts) agencies. For further information, write Dr. Jason Millman, Stone Hall, Cornell University, Ithaca, N.Y. 14850.

# APPENDIX IV

## MAJOR PRACTICUM EXPERIENCES OF TRAINEES

Note: The items on the following pages exclude many short-term experiences which could be considered practicum. These experiences include: short-term consultation with students and faculty on problems of research design and evaluation, short-term teaching assignments, attendance at professional meetings, serving on professional committees, and serving as referees for articles submitted to professional journals.

DONALD BURRILL

1. Work on the development of a secondary physics curriculum.

2. Assistant in the Cornell University Testing Bureau.

3. Work on the revision of the Cornell Mathematics Test.

4. Assistant in the Cornell Computing Center serving as a statistical and computer consultant.

5. Work at Educational Testing Service (one summer) on the design and development of teaching aids for preschool children and the analysis of observations in a Head Start program.

6. Provided instruction in computer applications (for historians).

7. Work on thesis, Computer-Generated Errors in Statistical Analysis.

8. Since graduating from the program, presented 5 different papers at professional meetings, written still 3 other papers and 3 proposals.

RICHARD GAGEN

1. Worked in a curriculum development effort on the sociology of history.

2. Participated in the design and analysis of studies of secondary organizations and community structure, and of community planning. Also participated in the actual interviewing of "key-informants". (3 years)

3. Attended an interuniversity consortium for one summer (6/67-8/67) at the University of Michigan dealing with research methods in the behavioral sciences.

4. Work related to thesis: Pluralism and Community Structure: A Comparative Analysis of Rural Centers in New York State.

5. Work related to the following papers:

   a. A Conceptual Quest for "Community". A paper delivered at the annual meetings of the Rural Sociological Society, Miami Beach, Florida, August, 1966.

   b. Voluntary Organizations in Small Communities of New York State: A Preliminary Report, Dept. of Rural Sociology, Cornell University, August, 1966. (with John Harp)

   c. Renewal Plans: A General Systems Analysis of Rural Townships. Rural Sociology, Vol. 33, December 1968. (with John Harp)

   d. Changes in Rural Social Organizations: Comparative Data from Three Studies. Rural Sociology, Vol. 34, March 1969. (with John Harp)

   e. Three articles in process (youth-subculture, liberation movement, etc.)

6. Working presently on a testbook in methodology.

JEAN ROII

1. Assistant on project obtaining the information needs of hospital patients.

2. Teaching assistant in the graduate statistics course in the Department of Psychology.

3. Work related to the paper: Assessing the Importance of Independent Variables in Nonlinear Causal Laws. Working Papers in Educational Research, No. 4, 1970. (With Richard Darlington.) Submitted for publication in the American Educational Research Journal (still out for review).

5. Work on the problem of double cross-validation.

6. Psychology Editor, Cornell Journal of Social Relations.

7. Work on the Ph. D. dissertation having the tentative title: A Method for Cross-Validating Principal Components Analyses.

MARGARET UNSWORTH

1. Teaching assistant, freshman statistics.

2. Assistant, Project Literacy -- basic research on the reading process.

3. Assistant, Cornell Critical Thinking Project -- a combination research and curriculum development project.

4. Work on problems of statistical interactions.

5. Assistant on a project in the College of Human Ecology whose goal is to discover some of the factors which would explain why some children fail in school when environmental factors are in their favor while others succeed in spite of many obstacles.

ROY WILLIAMS

1. Assistant on a study in the social-psychology department concerned with a comparison of six cultures.

2. Work on a project concerned with configural test scoring using response profile similarity data.

3. Assistant on the project in Human Ecology described under Margaret Unsworth.

4. Work related to thesis having tentative title: A New Method for Increasing the Validity of Educational Tests. A proposal of this title was submitted for possible USOE funding (still out for review) under the sponsor's name, Richard Darlington.

5. Work on the problem of person-free, sample-free calibration models.

6. Work related to the following publications:

   a. Review of Six Books of Readings in Educational Measurement. Psychometrika, 1968, 33, 510-512. (with Jason Millman)

   b. Confidence Testing -- A Reply. Measurement News, 1970, 13, 8-9. (with Jason Millman)

PAUL CIESLAK

1. Work in the research department of a large city public school system.

2. Assistant on Title III Project SESAME--concerned primarily with matters of evaluation and program development.

3. Evaluation of a project of the Cornell Law School to teach law concepts in high school.

4. Work on the problem of assessing potential remedial readers (performed for the Ithaca Public Schools).

5. Work on the problem of extending Mosier's double-cross validation -- likely area for dissertation.

PAUL CIESLAK

(continued)

6. Work on a project designed to test Carroll's, A Model of School Learning.

7. Work related to the following papers:

   a. Letter-to-the-Editor. American Statistician, 1970, 24, 49. (with Jason Millman)

   b. Relationship of Values to Evaluative Methodology. (unpublished)

JAMES COX

1. Teaching assistant, freshman psychology course.

2. Administration of individual tests.

3. Involvement with the writing of three different research proposals.

4. Assistant on the evaluation committee of an "alternative junior high school" which was initiated for the first time this fall in the Ithaca school district.

5. Work involved in writing papers on behavioral objectives and on the evaluation process as a product.

JOAN KNAPP

1. Assistant on a project concerned with developing, in a junior college environment, a program suited to high school drop-outs. Primarily concerned with ascertaining, through case study-interview techniques, the correlates of whether or not the program will succeed for a given individual.

2. Assistant on the Human Ecology project described under Margaret Unsworth.

3. Work on the problem of how item characteristics may serve to differentiate groups of teen-agers.

4. Assistant on the evaluation committee of an "alternative junior high school" which was initiated for the first time this fall in the Ithaca school district.

5. Participation as a steering committee member of a female studies curriculum development project. Includes participation in an ETV production, writing an article to be published in an anthology text for female studies, planning and initiating a course in the Department of Education (Women and Education), planning a course offering on the female personality, and, just getting underway, proposing a model for the evaluation of the entire Female Studies Program.

6. Work involved in writing papers in the areas of factor analysis, test homogeneity, path analysis, and the measurement of environments.

PAUL POPPEN

1. Assisted in a curriculum development project to teach techniques of computer programming to high school youngsters.

2. Work on a research project to determine the psychological correlates of certain grade-getting behaviors of college students. The study takes advantage of a unique situation in Cornell history in which, due to campus disorders, a chaotic and ambiguous set of practices regarding the giving of grades was in evidence.

SHARON WEINBERG

1. Worked for three summers (prior to becoming a Title IV fellow) for I.B.M.

2. Involvement as a professional staff member of a head start program.

3. Participated in math education experimental workshop in the Center for Research in Education.

4. Instructed in a remedial math course.

5. Work on the problem of (computer) iterative techniques for function minimization.

6. Work on a project designed to test Carroll's, A Model of Classroom Learning.

7. Assistant (this past summer) on the International Project for the Evaluation of Educational Achievement (centered at Columbia University).

8. Work involved in writing papers on canonical analysis, latent structure analysis and its relation to factor analysis, moderator variables, multidimensional scaling, and multiple regression as a test construction technique.

# APPENDIX V

## STUDENT REACTIONS TO THE THREE CORNELL TRAINEE PROGRAMS

(Solicited and Prepared by Darrel Murray)

New York State College of Agriculture and Life Sciences
a Statutory College of the State University
Cornell University

Department of Education
Stone Hall
Ithaca, N.Y. 14850

January 12, 1973

Dear

In this final year of the ESEA Title IV program at Cornell, those of us associated with the program have paused to ask two fundamental educational questions:

What aspects of your graduate education at Cornell were of most value to you in your current occupation?

In what ways did the Title IV program influence your eventual participation in educational research (defined within the broad scope of curriculum and instruction, foundations of education, and research methods)?

In seeking answers to these questions, we are soliciting your thoughtful, candid comments.

In addition, so that we may more fully document the contributions that students in the Title IV program have made to educational research, we respectfully request that you send along a current vitae including published research, papers submitted, and research in progress. You may wish to add, if appropriate, items which would indicate contributions to the educational research tradition in terms of:

a) advising other researchers reqarding research strategy,
b) participation as a member of an educational research team,
c) teaching, at the college or university level, courses in the braod area of educational research (curriculum and instruction, foundations of education, and research methods),
d) innovation and development of curricular materials,
e) evaluation of educational practices,
f) presentations at informal departmental seminars, conferences, professional meetings, etc.

We are sending this letter to your fellow program participants. Based on the content and interest expressed in the replies received, it is conceivable that we would invite past Title IV students to a conference, perhaps in late spring, to discuss issues, conflicts, and perspectives surrounding programs for preparing educational researchers.

We look forward to your comments and vitae. Your thoughts would be very helpful and much appreciated.

Sincerely yours,

| Joseph Novak | D. Bob Gowin | Jason Millman | Darrel Murray |
|---|---|---|---|
| Curriculum and Instruction | Foundations of Education | Research Methods | ESEA Title IV Review |

Please mail your reply to Darrel Murray before February 1.

Excerpts from Respondees Letters

It was encouraging that many of the respondees spent considerable time and space on their replies. Two page letters were the rule, rather than the exception. A few included, in addition to vitae, outlines of educational ventures in which they were currently engaged. Frequently appearing in the letters are thoughtful comments indicating considerable interest and concern about the fundamental educational questions raised. A sampling of these comments follows.

In answer to the question --

> What aspects of your graduate education at Cornell were of most value to you in your current occupation?

One respondee answered:

> Clearly, the most valuable "aspect" of my graduate studies, it this can be called an "aspect, was the great degree of freedom afforded me. The corollary of this was the development of individual responsibility for making what I did worthwhile. With the exception of one course and the final stages of my thesis, all the work I did was positively influenced by this environmental feature. The exceptions were not negatively influenced, they simply were not influenced by this aspect because they were required.

Another listed these immediately applicable aspects:

> The most valuable immediately applicable aspects of my graduate education at Cornell were:
>
> 1. the opportunity to do research in schools for both my M.A. and Ph.D. degrees.
> 2. the opportunity to write and publish while in graduate school.
> 3. the opportunity to attend both regional and national conferences with myychairman, in order to both observe, participate and to make new contacts.
> 4. the opportunity to prepare and give lectures, white letters of recommendation, make up tests and administer them -- in short, to learn the ropes by doing.
>
> May I add, I have encountered no professional experience on my present job that I was unprepared for.

One person emphasized the favorable opportunity to develop a "strong interdisciplinary background":

> Probably the most valuable aspect of my graduate education at Cornell was the approach to learning to which I was exposed - intellectual and scholary, but also, and perhaps more importantly, flexible, individualized, self-directed. Because Cornell does not have rigid structures or requirements, students were encouraged to gregister in other colleges of the university. For me, this meant the opportunity to develop a strong, interdisciplinary gackground (which, in som ways, I am only beginning to appreciate; for example, work in ILR has made it possible for me to talk intelligently with the industrial engineers who occupy the suite of offices next to those of sociology at my present university). Taking courses (both those which wera a part of the training program and others as well) iwith students from a number of departments, though sometimes frustrating (e.g., not understanding the language of each other's disciplines), provided for the cross-fertilization of ideas. At Cornell, I learned a respect for different views, both within and between disciplines. Faculty, even when they disagreed, respected each other as scholars, and as persons. My experiences as a student at Cornell have undoubtedly influenced my approach to teaching and research.

The majority of letters cited memorable personal contacts with the faculty at Cornell. A small sampling of these comments is included; names have been withheld to protect those mentioned from further inflation of the ego.

> Dozens of informal, impromptu talks held in Dr. -----'s and Dr. -----'s offices at sometimes went on for an hour or more. These experiences combined to effect a simultaneous broadening and deepening of my knowledge and views about education, educational research, philosophy, and philosophy of education.
>
> My chairman, Dr. ------, had me reading, criticizing, and summarizing essays in the fields of philosophy and philosophy of education. The meetings we had together were most beneficial to my "philosophical development".
>
> Dr. ----'s seminar was extremely valuable and relevant to what I am doing.
>
> Dr. ---- was very supportive and stimulating, although I never took a course with him, being around him was very rewarding and contibuted to my growth. The diversity of faculty and graduate students can't be overstressed. Dr.'s-----'s and -----, who I argued with most of the time, were also contributers to my growth.
>
> I must also add that the course given by Professor -----, during my last year at Cornell, stands out as especially valuable; it provided mor critical thinking directed toward educational research, than did the several courses in research methodology.

Not all voices resounded in unison. Note these differing positions of the value of the thesis.

> Working on and doing my thesis was the most valuable project I was and am involved in. The reasons for this is because it is directly relevant to what I AM now doing. The fact that the Title IV program was flexible enough to allow me to do what I wanted to do for my thesis made the program valuable.
>
> Of less value to me was the actual experience of writing my thesis. Though I learned a great deal in the course of preparing it, I was allowed too much freedon, so that the result is not as incisive as I would hope. The problem was mine. I could have sought greater direction from my committee, I chose not to do so.

It is obvious that the many vagaries of an occupational future are beyond the control of even the best designed graduate program. This fact is laid bare in the following comment:

> I am currently studying to become an acturary at a large insurance company in the mid-west. Therefore my Title IV training could be considered "wasted" from the standpoint of current occupational achievements and goals.

APPENDIX VI

ADDRESSES AND OCCUPATIONS OF TRAINEES

| NAME | ADDRESS | OCCUPATION |
|---|---|---|
| Bierly, Thomas | 1027 66th Street<br>Des Moines, Iowa 52311 | Insurance Actuary |
| Burrill, Donald | Department of Measurement & Evaluation<br>Ontario Institute for Studies in Education<br>252 Bloor Street W<br>Toronto, 5, Ontario CANADA | Faculty Member |
| Cieslak, Paul | Division of Planning and Long-Range Development<br>Milwaukee Public Schools<br>5225 W. Vuliet Street<br>P. O. Box Drawer 10K<br>Milwaukee, Wisconsin 53201 | Research Associate |
| Cox, James M. | Elmira Psychiatric Center<br>214 Washington Street<br>Elmira, New York 14902 | Associate Psychologist |
| Gagen, Richard | Department of Sociology<br>University of South Florida<br>Tampa, Florida | Faculty Member |
| Knapp, Joan E. | Test Development<br>Educational Testing Service<br>Princeton, New Jersey 08540 | Associate Examiner |
| Mink, Stanley | PS 158<br>School for the Deaf<br>76th Street & York Avenue<br>New York, New York | Teacher |
| Poppen, Paul | Department of Psychology<br>Cornell University<br>Ithaca, New York 14850 | Graduate Fellow |

APPENDIX VI, continued

| NAME | ADDRESS | OCCUPATION |
|---|---|---|
| Rom, Jean C. | Department of Psychology<br>University of Illinois<br>at Champaign-Urbana<br>Urbana, Illinois | Instructor |
| Unsworth, Margaret | College of Arts and Sciences<br>Cornell University<br>Ithaca, New York 14850 | Coordinator of Teacher Preparation |
| Weinberg, Sharon | Division of Science and<br>Mathematics Education<br>New York University<br>23 Press Building<br>Washington Square<br>New York, New York 10003 | Faculty Member |
| Williams, Roy E. | Department of Education<br>University of Massachusetts<br>Amherst, Massachusetts | Faculty Member |